

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, NOBUHIRO ITOH, a citizen of Japan residing at Saitama, Japan have invented certain new and useful improvements in

FACSIMILE COMMUNICATION METHOD, FACSIMILE APPARATUS AND COMPUTER-READABLE STORAGE MEDIUM

of which the following is a specification:-

BACKGROUND OF THE INVENTION

This application claims the benefit of a Japanese Patent Application No.2002-304964 filed October 18, 2002, in the Japanese Patent Office, the disclosure of which is hereby incorporated by reference.

1. Field of the Invention

The present invention generally relates to facsimile communication methods, facsimile apparatuses and computer-readable storage media, and more particularly to a facsimile communication method and a facsimile apparatus which output a communication result indicative of whether or not image information is correctly transmitted to a destination apparatus, and a computer-readable storage medium which stores a computer program for causing a computer to output such a communication result.

2. Description of the Related Art

Conventionally, when an operator transmits image information from a facsimile apparatus to a destination apparatus, the operator normally wishes to confirm whether or not the image information is correctly transmitted to the destination apparatus. This confirmation may be made by automatically printing out a communication result report immediately after the transmission ends so that the operator may visually

confirm the communication or, automatically outputting a melody sound to notify the end of transmission. In the latter case, the communication result can be notified to the operator by the melody sound even if the operator
5 has moved away from the facsimile apparatus.

However, from the point of view of security, it is not always desirable to print out the communication result report because the communication result report may contain personal information. In
10 addition, in an office environment, it is not always desirable to output the melody sound to notify the end of transmission because the melody sound may be distracting to office workers. In other words, there recently are demands to prohibit printing out the
15 communication result report or outputting the melody sound after the transmission ends.

For example, a Japanese Laid-Open Patent Application No.7-143302 proposes a facsimile apparatus which does not output the communication result report or
20 image information related to a secret communication.

Consequently, when the output of the communication result report or the melody sound is prohibited for security or environmental reasons, there was a problem in that it is difficult to confirm whether
25 or not the image information is correctly transmitted

from the facsimile apparatus to the destination apparatus. This is very inconvenient for the operator, particularly if the image information that is transmitted to the destination apparatus is important
5 and/or relates to urgent matter.

SUMMARY OF THE INVENTION

Accordingly, it is a general object of the present invention to provide a novel and useful
10 facsimile communication method, facsimile apparatus and computer-readable storage medium, in which the problem described above is eliminated.

Another and more specific object of the present invention is to provide a facsimile
15 communication method, a facsimile apparatus and a computer-readable storage medium which outputs a communication result notification only with respect to a facsimile transmission which requires immediate confirmation on whether or not the facsimile
20 transmission is correctly made to a destination apparatus, so as enable quick confirmation from the communication result notification while maintaining security.

Still another and more specific object of the present invention is to provide a facsimile apparatus
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comprising a specific destination name storage section to store destination names of specific destinations; a receiving end identifying section to identify a receiving end by analyzing terminal information received from the receiving end when making a facsimile transmission to the receiving end; a specific destination identifying section to search from the specific destination name storage section a destination name corresponding to the receiving end which is identified by the receiving end identifying section; and a notifying section to output a communication result notification indicative of a result of the facsimile transmission to the receiving end only when the specific destination identifying section finds the corresponding destination name in the specific destination name storage section. According to the facsimile apparatus of the present invention, the communication result notification is made only with respect to the facsimile transmission to the specific destination which requires immediate confirmation on whether or not facsimile transmission was successful, that is, whether or not the image information was correctly transmitted the specific destination. For this reason, it is possible to quickly and positively notify the operator of the communication result, while maintaining security or privacy.

A further object of the present invention is to provide a facsimile apparatus comprising specific destination name storage means for storing destination names of specific destinations; receiving end
5 identifying means for identifying a receiving end by analyzing terminal information received from the receiving end when making a facsimile transmission to the receiving end; specific destination identifying means for searching from the specific destination name
10 storage means a destination name corresponding to the receiving end which is identified by the receiving end identifying means; and notifying means for outputting a communication result notification indicative of a result of the facsimile transmission to the receiving end only
15 when the specific destination identifying means finds the corresponding destination name in the specific destination name storage means. According to the facsimile apparatus of the present invention, the communication result notification is made only with
20 respect to the facsimile transmission to the specific destination which requires immediate confirmation on whether or not facsimile transmission was successful, that is, whether or not the image information was correctly transmitted the specific destination. For
25 this reason, it is possible to quickly and positively

notify the operator of the communication result, while maintaining security or privacy.

Another object of the present invention is to provide a facsimile communication method comprising

5 storing destination names of specific destinations in a storage section; identifying a receiving end by analyzing terminal information received from the receiving end when making a facsimile transmission to the receiving end; searching from the storage section a

10 destination name corresponding to the receiving end which is identified; and outputting a communication result notification indicative of a result of the facsimile transmission to the receiving end only when the corresponding destination name is found in the

15 storage section. According to the facsimile communication method of the present invention, the communication result notification is made only with respect to the facsimile transmission to the specific destination which requires immediate confirmation on

20 whether or not facsimile transmission was successful, that is, whether or not the image information was correctly transmitted the specific destination. For this reason, it is possible to quickly and positively notify the operator of the communication result, while

25 maintaining security or privacy.

Still another object of the present invention is to provide a computer-readable storage medium which stores a program for causing a computer to carry out facsimile functions, comprising a specific destination name storage procedure causing the computer to store destination names of specific destinations in a storage section; a receiving end identifying procedure causing the computer to identify a receiving end by analyzing terminal information received from the receiving end when making a facsimile transmission to the receiving end; a specific destination identifying procedure causing the computer to search from the storage section a destination name corresponding to the receiving end which is identified by the receiving end identifying section; and a notifying procedure causing the computer to output a communication result notification indicative of a result of the facsimile transmission to the receiving end only when the specific destination identifying section finds the corresponding destination name in the storage section. According to the computer-readable storage medium of the present invention, the communication result notification is made only with respect to the facsimile transmission to the specific destination which requires immediate confirmation on whether or not facsimile transmission was successful,

that is, whether or not the image information was correctly transmitted the specific destination. For this reason, it is possible to quickly and positively notify the operator of the communication result, while
5 maintaining security or privacy.

Other objects and further features of the present invention will be apparent from the following detailed description when read in conjunction with the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a system block diagram showing an embodiment of a facsimile apparatus according to the present invention;

15 FIG. 2 is a flow chart for explaining an operation of the facsimile apparatus shown in FIG. 1;

FIG. 3 is a diagram for explaining printing of a stamp mark on a document;

20 FIG. 4 is a diagram for explaining a displayed setting menu for selecting melody sound; and

FIG. 5 is a diagram for explaining a communication result report which is printed only with respect to a specific destination.

25 DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 is a system block diagram showing an embodiment of a facsimile apparatus according to the present invention. This embodiment of the facsimile apparatus employs an embodiment of a facsimile

5 communication method according to the present invention.

A facsimile apparatus 1 shown in FIG. 1 at least includes a function of recognizing a facsimile transmission that is made to a specific destination apparatus.

10 As shown in FIG. 1, the facsimile apparatus 1 includes a system controller 3, an operation and display section 5, a scanner 7, a plotter 9, a communication controller 11, an encoding and decoding section 13, a specific destination identifying section 15, a
15 communication result report output section 17, a transmission end sound output section 19, a stamp mark printing section 21, a specific destination name storage section 23, and a receiving end identifying section 25 which are connected via a system bus 27. The facsimile
20 apparatus 1 further includes a modem 29 which is connected to the communication controller 11, and a network control unit 31 which is connected to the modem 29. The network control unit 31 is connected to a network.

25 The system controller 3 manages and controls

the operation of the entire facsimile apparatus 1. The operation and display section 5 includes various operation keys which are operated by an operator of the facsimile apparatus 1, and various displays or
5 indicators for displaying messages and the like to the operator. The scanner 7 scans a document, decomposes the document image into pixels at a predetermined resolution, and converts each pixel into a black-and-white image signal, for example. The plotter 9 prints
10 an image with the same resolution as that of the scanner 7.

The communication controller 11 carries out a facsimile transmission according to a predetermined transmission control procedure, and carries out a
15 facsimile reception according to a predetermined reception control procedure. The encoding and decoding section 13 encodes transmitting image information which is to be transmitted according to a predetermined encoding scheme, so as to compress the amount of
20 information of the image information. The encoding and decoding section also decodes encoded received image information which is received, so as to restore the original image information.

The specific destination identifying section
25 15 identifies (or distinguishes) a facsimile

transmission to a specific destination. The communication result report output section 17 outputs a communication result report which is to be printed by the plotter 9 or displayed on the operation and display section 5, after the facsimile transmission to the specific destination ends. The communication result report includes contents of communication results including communication logs and the like. The transmission end sound output section 19 outputs a melody sound which is specified by the operator depending on the specific destination, after the facsimile transmission ends.

The stamp mark printing section 21 judges whether or not to print a stamp mark on the document which is read in a normal manner by the scanner 7 when making the facsimile transmission to the specific destination. The stamp mark printing section 21 may also control a printing position of the stamp mark on the document which is scanned (read), depending on a setting which is made by the operator from the operation and display section 5. The printed stamp mark on the document indicates that the document has been scanned or, has been scanned and transmitted to the specific destination. The stamp mark printing section 21 may print the stamp mark on the document by a stamper which

is provided within the plotter 9 or provided separately from the plotter 9. Alternatively, the stamp mark printing section 21 may print the stamp mark on the document using the plotter 9.

5 The specific destination name storage section 23 stores names of specific destinations. The receiving end identifying section 23 identifies the receiving end apparatus when making the facsimile transmission, by analyzing terminal information received from the
10 receiving end apparatus.

 The specific destination identifying section 15 may register destination names which are identifiable by protocol, such as Receiver Terminal Identification (RTI), Called Subscriber Identification (CSI) and
15 receiving end terminal identifier of the specific destinations, in the specific destination name storage section 23, so as to enable identification of the facsimile transmission to the specific destination. The specific destination identifying section 15 may also
20 register telephone number information and destination names which are specified by a quick-registration, in the specific destination name storage section 23, so as to enable identification of the facsimile transmission to the specific destination.

25 When making the facsimile transmission to the

specific destination, the specific destination
identifying section 15 searches for the destination name
corresponding to the receiving end identified by the
receiving end identifying section 25, from the specific
5 destination name storage section 23. When the
destination name corresponding to the receiving end
identified by the receiving end identifying section 25
is found from the specific destination name storage
section 23, the specific destination identifying section
10 15 instructs a predetermined transmission result
notifying process to the communication result report
output section 17.

The specific destination name storage section
23 may also store telephone number information input
15 from the operation and display section 5 by the operator,
and destination names specified by the quick-
registration.

The modem 29 modulates the transmitting
information which is received via the communication
20 controller 11 and is to be transmitted, and demodulates
the received information which is received via the
network control unit 31. The network control unit 31
transmits the transmitting information to the network
such as a public telephone line. In addition, the
25 received information is received by the network control

unit 31 via the network.

By using the above described structure of the facsimile apparatus 1, this embodiment can control the output of the communication result report corresponding to the specific destination. At the same time, this embodiment enables a positive judgement to be made on whether the image information was correctly transmitted to the specific destination or the transmission to the specific destination failed. Hence, when the facsimile apparatus 1 is located on the receiving end, it is possible to quickly exchange information with a transmitting end, and positively transmit necessary and/or requested information, such as the terminal information, to the transmitting end, because the necessary and/or requested information is transmitted to the transmitting end for use in making the communication result report at the transmitting end regardless of the general setting of the receiving end.

Next, a description will be given of an operation of the facsimile apparatus 1 shown in FIG. 1, by referring to FIG. 2. FIG. 2 is a flow chart for explaining the operation of the facsimile apparatus 1.

When a step 101 starts a facsimile transmission of the facsimile apparatus 1 in FIG. 1, a step 103 decides whether or not a destination (receiving

end) is one of the specific destinations registered in the specific destination name storage section 23. In other words, the receiving end identifying section 25 identifies the receiving end (destination) by analyzing
5 the terminal information which is received from the receiving end when the facsimile transmission is made to the receiving end, and the specific destination identifying section 15 judges whether or not the identified receiving end is registered as one of the
10 specific destinations in the specific destination name storage section 23.

If the decision result in the step 103 is YES, a step 105 decides whether or not the reading of a page of a document has ended, and the step 105 is repeated
15 until the decision result becomes YES. If the decision result in the step 105 is YES, a step 107 decides whether or not to print the stamp mark on the document page. In other words, the stamp mark printing section 21 judges whether or not the stamp mark is to be printed
20 on the document page which has been read in a normal manner by the scanner 7 when making the facsimile transmission to the specific destination or, judges whether or not the printing of the stamp mark at an arbitrary position of the document page has been set
25 (instructed) by a user operation.

If the decision result in the step 107 is YES,
a step 109 prints the stamp mark on the document page or,
prints the stamp mark at the arbitrary position of the
document page set by the user operation depending on the
5 specific destination. The process advances to a step
111 after the step 109 of if the decision result in the
step 107 is NO.

FIG. 3 is a diagram for explaining the
printing of the stamp mark on the document page. FIG. 3
10 shows a case where the document page contains an image
"Ricoh", and a document transport direction is indicated
by an arrow. For example, the stamp mark is printed at
a position A1 for the facsimile transmission to a
specific destination D1, and the stamp mark is printed
15 at a position A2 for the facsimile transmission to a
specific destination D2. In this embodiment, the stamp
mark has a circular shape, but the shape and the number
of marks forming the stamp mark is not limited to those
of this embodiment. For example, two or more marks,
20 having the same or different shapes, may form the stamp
mark. Preferably, the stamp mark is printed on a side
of the document page opposite to the side containing the
image, particularly when the document page which is
scanned contains images on both sides.

25 Therefore, since the stamp mark is printed on

the document page at a position which is set by the operator depending on the specific destination, the operator can positively confirm the facsimile transmission to the specific destination by visually
5 confirming the position of the stamp mark printed on the document page.

Of course, the stamp mark may be printed on the document page in a manner other than the above, as long as it enables identification of the specific
10 destination to which the image of the document page is transmitted. For example, the color of the stamp mark and/or the shape of the stamp mark may be changed depending on the specific destination. In other words, it is possible to change the position and/or color
15 and/or shape of the stamp mark, depending on the specific destination.

The step 111 decides whether or not the facsimile transmission has ended. The process returns to the step 105 if the decision result in the step 111
20 is NO. If the decision result in the step 111 is YES, a step 113 decides whether or not a transmission end sound is to be output. If the decision result in the step 113 is YES, a step 115 outputs the transmission end sound. In other words, the transmission end sound output
25 section 19 outputs a melody sound which is specified by

the operator depending on the specific destination, when the facsimile transmission ends.

FIG. 4 is a diagram for explaining a displayed setting menu for selecting the melody sound. When the operator selects the setting menu from the operation and display section 5, the setting menu shown in FIG. 4 is displayed on the operation and display section 5 with respect to the specific destination. The setting menu displays the specific destination as an item, and the operator turns ON/OFF the transmission end sound. Further, in a case where the transmission end sound is turned ON, the operator selects the melody sound for the specific destination. In the particular case shown in FIG. 4, "2/3" indicates that the transmission end sound is being set for the second item, that is, the second specific destination D2, of the three items, and the transmission end sound is turned ON and selected to a melody sound S1 of ten possible melody sounds S1 through S10.

The setting menu for a previous item is displayed when a "previous item" button is operated, and the setting menu for a next item is displayed when a "next item" button is operated. The setting of the transmission end sound is cancelled when a "cancel" button is operated. When a "set" button is operated,

the ON/OFF state of the transmission end sound and the selected melody sound are set with respect to the item (specific destination).

Therefore, the melody sound which may be set
5 differently for each specific destination is output when the facsimile transmission ends, to thereby enable the operator to positively confirm from the melody sound that the facsimile transmission to the specific destination has ended.

10 After the step 115 or if the decision result in the step 113 is NO, a step 117 decides whether or not to output the communication result report. If the decision result in the step 117 is YES, a step 119 outputs the communication result report, and the process
15 ends. In other words, if the decision result in the step 117 is YES, the communication result report output section 17 prints a communication result report shown in FIG. 5, for example, by the plotter 9. Alternatively, the communication result report output section 17 may
20 display the communication result report on the operation and display section 5.

FIG. 5 is a diagram for explaining the communication result report which is printed only with respect to the specific destination. FIG. 5 shows a
25 case where the communication result report includes a

memory transmission result report. This memory transmission result report includes the time and date of the report, the time and date of acceptance of the memory transmission, the file number assigned to the memory transmission, the transmitting conditions, the destination, the number of document pages, and the result of the facsimile transmission. The memory transmission is a kind of store-and-forward facsimile transmission, and is made after scanning the document image into a memory of the facsimile apparatus, and the actual transmission of the stored document image may be made at an arbitrary time or at a time specified by the operator.

In FIG. 5, a bottom portion of the memory transmission result report includes a description of error codes e1) through e4) which are displayed under the result of the facsimile transmission if the facsimile transmission fails. However, a code "OK" is indicated under the result of the facsimile transmission in this particular case because the facsimile transmission is successful. In FIG. 5, "1) COMPANY R" and "2) DEPT. 1" indicated in a top right portion under the heading "MEMORY TRANSMISSION RESULT REPORT (2002/10/19 14:24)" indicates two kinds of transmitting end names which may be set in this particular case. Of

course, it is possible to indicate only one kind of transmitting end name or, not to indicate the transmitting end name, to suit the user's needs.

Therefore, the communication result report is
5 output only when the facsimile transmission to the specific destination ends, to thereby enable the operator to positively confirm from the communication result report that the facsimile transmission to the specific destination has ended. Of course, the contents
10 and/or format of the communication result report may be set differently for each specific destination. In this case, it is not essential to include the specific destination in the communication result report, because the specific destination can be identified from the
15 contents and/or format of the communication result report, to thereby maintain security or privacy.

The process ends if the decision result in the step 117 shown in FIG. 2 is NO. In addition, the process also ends if the decision result in the step 103
20 is NO.

The stamp mark printed in the step 109, the transmission end sound output in the step 115, and the communication result report output in the step 119 may combined arbitrarily by the operator to suit the
25 operator's needs and/or the environment in which the

facsimile apparatus 1 is used. In other words, the communication result notification which is only made with respect to the facsimile transmission to the specific destination, may be any one or combinations of the communication result notifications made in the steps 109, 115 and 119.

Therefore, according to this embodiment, the communication result notification is made only with respect to the facsimile transmission to the specific destination which requires immediate confirmation on whether or not facsimile transmission was successful, that is, whether or not the image information was correctly transmitted the specific destination. For this reason, it is possible to quickly and positively notify the operator of the communication result, while maintaining security or privacy.

When the communication result notification is made immediately after the facsimile transmission to the specific destination ends, it is possible for the operator of the facsimile apparatus to quickly obtain the communication result while maintaining security, even in an office environment in which more than one person uses the facsimile apparatus.

When the communication result notification is made by printing or displaying the communication result

report immediately after the facsimile transmission to the specific destination ends, it is possible for the operator of the facsimile apparatus to visually and accurately confirm the communication result, even when
5 the operator moves away from the facsimile apparatus before the facsimile transmission ends. Accordingly, it is possible to quickly recognize an error such as failed transmission and transmission to an erroneous destination, by looking at the communication result
10 report. Furthermore, it is possible to quickly find out the cause of the error from a communication log contained in the communication result report.

When the communication result notification is made by outputting the transmission end sound
15 immediately after the facsimile transmission to the specific destination ends, it is possible for the operator of the facsimile apparatus to immediately confirm the communication result from the sound, even when the operator moves away from the facsimile
20 apparatus before the facsimile transmission ends.

When the communication result notification is made by printing the stamp mark on the document page, it is possible for the operator of the facsimile apparatus to visually and accurately confirm the scanning of the
25 document page. Hence, it is possible to quickly

recognize a scanning error and remedy the error, so as to minimize transmission errors.

Since the communication result notification which is only made with respect to the facsimile transmission to the specific destination, may be any one or combinations of the communication result notifications made in the steps 109, 115 and 119 described above, it is possible for the operator of the facsimile apparatus to freely select the kind or combination of the communication result notification to suit the operator's needs, such as importance and urgency of the facsimile transmission.

Next, a description will be given of an embodiment of a computer-readable storage medium according to the present invention. The computer-readable storage medium is formed by a recording medium capable of storing a computer program. The recording medium may be selected from any suitable media including magnetic, optical and magneto-optical recording media, and semiconductor memory devices. The computer program stored in the computer-readable storage medium includes procedures for causing a computer or computer system to carry out the facsimile functions of the facsimile apparatus 1 described above.

The computer or computer system may be formed

by any suitable general purpose computer, such as a personal computer, including a CPU, a memory, an input device such as a keyboard and a mouse, and a display unit. The personal computer may be connected to a
5 printer and to a scanner, if necessary. In this case, the functions of at least the system controller 3, the communication controller 11, the encoding and decoding section 13, the specific destination identifying section 15, the communication result report output section 17,
10 the transmission end sound output section 19, the stamp mark printing section 21, and the receiving end identifying section 25 are realized by the CPU, and the specific destination name storage section is realized by the memory. The operation and display section 5 may be
15 realized by the input device and the display unit. The plotter 9 and the stamper are realized by the printer. The functions of the modem 29 and the network control unit 31 may be additionally realized by the CPU.

In the embodiment described above, the
20 specific destination identifying section 15 may register the telephone number information and the destination names which are specified by a quick-registration in units of destination groups, in the specific destination name storage section 23, so as to enable identification
25 of the facsimile transmission to the specific

destination. In this case, the registration of the specific destinations can be simplified by making the registration in units of destination groups.

Further, the present invention is not limited
5 to these embodiments, but various variations and modifications may be made without departing from the scope of the present invention.

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